

MICroneedle DEVICES AND METHODS OF
MANUFACTURE

5

ABSTRACT OF THE DISCLOSURE

Microneedle devices and methods of manufacturing the microneedle devices. The microneedle devices include microneedles protruding from a substrate, with the microneedles piercing a cover placed over the substrate surface from which the microneedles protrude. The cover and the microneedle substrate together define a capillary volume in fluid communication with the base of each microneedle. One manner of using microneedle arrays of the present invention is in methods involving the penetration of skin to deliver medicaments or other substances and/or extract blood or tissue. Manufacturing methods may include simultaneous application of pressure and ultrasonic energy when piercing the cover with the microneedles.

RECEIVED
U.S. PATENT AND
TRADEMARK OFFICE
JAN 15 2002

EXpress MAIL MAIL NUMBER EL 888274233 US
DATE OF DEPOSI^T 15 JANUARY 2002
I HEREBY CERTIFY THAT THIS PAPER OR FEE IS BEING DEPOSITED WITH THE
UNITED STATES POSTAL SERVICE "EXPRESS MAIL POST OFFICE TO ADDRESSEE"
SERVICE UNDER 37 CFR 1.10 ON THE DATE INDICATED ABOVE AND IS ADDRESSED TO
THE ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

PRINTED NAME KEVIN W. RAASCH
SIGNATURE KW Raasch